ACCURATE THICKNESS MEASUREMENT OF THIN CONDUCTIVE FILM

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ABSTRACT OF THE DISCLOSURE

The thickness of a thin conductive film is accurately measured without direct knowledge of the temperature of the sample. A coulometer measurement during deposition of the conductive film on a substrate, along with other data such as the plated surface area, the electrochemical reaction, the molar volume of the deposited metal and the coulombic efficiency, is used to determine the average thickness of the film. Eddy current measurements yield the sheet resistance of the film at a plurality of locations, from which the average sheet resistance can be determined. The eddy current measurements are made so as to reduce the effects of any temperature change in the sample. The average thickness and the average sheet resistance yield the average resistivity of the film. The thickness of the film at a measurement location can be calculated using that average resistivity and the sheet resistance measurement at that location.